

AM101378.ST25.txt
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<212> PRT
<213> Homo sapiens
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35 40 45

Ala Arg Leu Ala Ser Pro Leu Pro Arg Glu Glu Glu Ile Val Phe Pro
50 55 60

Glu Lys Leu Asn Gly Ser Val Leu Pro Gly Ser Gly Ala Pro Ala Arg
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Leu Leu Cys Arg Leu Gln Ala Phe Gly Glu Thr Leu Leu Leu Glu Leu
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Glu Gln Asp Ser Gly Val Gln Val Glu Gly Leu Thr Val Gln Tyr Leu
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Gly Gln Ala Pro Glu Leu Leu Gly Gly Ala Glu Pro Gly Thr Tyr Leu
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Met Cys Asn Val Lys Ala Pro Leu Gly Ser Pro Ser Pro Arg Pro Arg
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Arg Ala Lys Arg Phe Ala Ser Leu Ser Arg Phe Val Glu Thr Leu Val
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Val Ala Asp Asp Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg
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Ser Ile Arg Asn Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu
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Ser Asp Pro Asp His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp
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Leu Cys Gly Val Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly
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Thr Val Cys Asp Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly
340 345 350

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Met Leu His Asp Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu
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Glu Glu Pro Trp Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu
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Asp Asn Gly Tyr Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu
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His Leu Pro Val Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln
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Cys Gln Leu Thr Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro
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Pro Pro Cys Ala Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala
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Met Cys Gln Thr Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly
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Pro Ala Gln Ala Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu
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<213> Artificial

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<223> This is an artificial DNA sequence cloned by PCR amplification

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<223> artificial DNA sequence

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<210> 3
 <211> 1421
 <212> DNA
 <213> Artificial

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 <213> Homo sapiens

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 <213> Homo sapiens

<400> 15

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Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro Ser Ile Arg Asn
 35 40 45

Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu Gly Ser Gly Glu
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Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr Leu Arg Ser Phe
 65 70 75 80

Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp Ser Asp Pro Asp
 85 90 95

His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Val
 100 105 110

Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp
 115 120 125

Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly Leu Gln Ser Ala
 130 135 140

Phe Thr Ala Ala His Glu Leu Gly His Val Phe Asn Met Leu His Asp
 145 150 155 160

Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu Ser Thr Ser Arg
 165 170 175

His Val Met Ala Pro Val Met Ala His Val Asp Pro Glu Glu Pro Trp

180

190

Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu Asp Asn Gly Tyr
195 200 205

Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu His Leu Pro Val
210 215 220

Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln Cys Gln Leu Thr
225 230 235 240

Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro Pro Pro Cys Ala
245 250 255

Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala Met Cys Gln Thr
260 265 270

Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly Pro Ala Gln Ala
275 280 285

Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu Gln Asp Phe Asn
290 295 300

Ile Pro Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys
305 310 315 320

Ser Arg Thr Cys Gly Gly Gly Val Gln Phe Ser Ser Arg Asp Cys Thr
325 330 335

Arg Pro Val Pro Arg Asn Gly Gly Lys Tyr Cys Glu Gly Arg Arg Thr
340 345 350

Arg Phe Arg Ser Cys Asn Thr Glu Asp Cys Pro Thr Gly Ser Ala Leu
355 360 365

Thr Phe Arg Glu Glu Gln Cys Ala Ala Tyr Asn His Arg Thr Asp Leu
370 375 380

Phe Lys Ser Phe Pro Gly Pro Met Asp Trp Val Pro Arg Tyr Thr Gly
385 390 395 400

Val Ala Pro Gln Asp Gln Cys Lys Leu Thr Cys Gln Ala Arg Ala Leu
405 410 415

Gly Tyr Tyr Tyr Val Leu Glu Pro Arg Val Val Asp Gly Thr Pro Cys
420 425 430

Ser Pro Asp Ser Ser Ser Val Cys Val Gln Gly Arg Cys Ile His Ala
 435 440 445

Gly Cys Asp Arg Ile Ile Gly Ser Lys Lys Lys Phe Asp Lys Cys Met
 450 455 460

Val Cys Gly Gly Asp Gly Ser Gly Cys Ser Lys Gln Ser Gly Ser Phe
 465 470 475 480

Arg Lys Phe Arg Tyr Gly Tyr Asn Asn Val Val Thr Ile Pro Ala Gly
 485 490 495

Ala Thr His Ile Leu Val Arg Gln Gln Gly Asn Pro Gly His Arg Ser
 500 505 510

Ile Tyr Leu Ala Leu Lys Leu Pro Asp Gly Ser Tyr Ala Leu Asn Gly
 515 520 525

Glu Tyr Thr Leu Met Pro Ser Pro Thr Asp Val Val Leu Pro Gly Ala
 530 535 540

Val Ser Leu Arg Tyr Ser Gly Ala Thr Ala Ala Ser Glu Thr Leu Ser
 545 550 555 560

Gly His Gly Pro Leu Ala Gln Pro Leu Thr Leu Gln Val Leu Val Ala
 565 570 575

Gly Asn Pro Gln Asp Thr Arg Leu Arg Tyr Ser Phe Phe Val Pro Arg
 580 585 590

Pro Thr Pro Ser Thr Pro Arg Pro Thr Pro Gln Asp Trp Leu His Arg
 595 600 605

Arg Ala Gln Ile Leu Glu Ile Leu Arg Arg Arg Pro Trp Ala Gly Arg
 610 615 620

Lys
 625

<210> 16
 <211> 1875
 <212> DNA
 <213> Homo sapiens

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<211> 482
<212> PRT

<213> Homo sapiens

<400> 17

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Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg Tyr Leu Leu Thr
 20 25 30

Val Met Ala Ala Ala Lys Ala Phe Lys His Pro Ser Ile Arg Asn
 35 40 45

Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu Gly Ser Gly Glu
 50 55 60

Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr Leu Arg Ser Phe
 65 70 75 80

Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp Ser Asp Pro Asp
 85 90 95

His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Val
 100 105 110

Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp
 115 120 125

Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly Leu Gln Ser Ala
 130 135 140

Phe Thr Ala Ala His Glu Leu Gly His Val Phe Asn Met Leu His Asp
 145 150 155 160

Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu Ser Thr Ser Arg
 165 170 175

His Val Met Ala Pro Val Met Ala His Val Asp Pro Glu Glu Pro Trp
 180 185 190

Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu Asp Asn Gly Tyr
 195 200 205

Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu His Leu Pro Val
 210 215 220

Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln Cys Gln Leu Thr
 225 230 235 240

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Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro Pro Pro Cys Ala
245 250 255

Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala Met Cys Gln Thr
260 265 270

Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly Pro Ala Gln Ala
275 280 285

Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu Gln Asp Phe Asn
290 295 300

Ile Pro Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys
305 310 315 320

Ser Arg Thr Cys Gly Gly Gly Val Gln Phe Ser Ser Arg Asp Cys Thr
325 330 335

Arg Pro Val Pro Arg Asn Gly Gly Lys Tyr Cys Glu Gly Arg Arg Thr
340 345 350

Arg Phe Arg Ser Cys Asn Thr Glu Asp Cys Pro Thr Gly Ser Ala Leu
355 360 365

Thr Phe Arg Glu Glu Gln Cys Ala Ala Tyr Asn His Arg Thr Asp Leu
370 375 380

Phe Lys Ser Phe Pro Gly Pro Met Asp Trp Val Pro Arg Tyr Thr Gly
385 390 395 400

Val Ala Pro Gln Asp Gln Cys Lys Leu Thr Cys Gln Ala Arg Ala Leu
405 410 415

Gly Tyr Tyr Tyr Val Leu Glu Pro Arg Val Val Asp Gly Thr Pro Cys
420 425 430

Ser Pro Asp Ser Ser Ser Val Cys Val Gln Gly Arg Cys Ile His Ala
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Val Cys Gly Gly Asp Gly Ser Gly Cys Ser Lys Gln Ser Gly Ser Phe
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Arg Lys

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 <212> DNA
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Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg Tyr Leu Leu Thr
20 25 30

Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro Ser Ile Arg Asn
35 40 45

Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu Gly Ser Gly Glu
50 55 60

Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr Leu Arg Ser Phe
65 70 75 80

Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp Ser Asp Pro Asp
85 90 95

His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Val
100 105 110

Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp
115 120 125

Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly Leu Gln Ser Ala
130 135 140

Phe Thr Ala Ala His Glu Leu Gly His Val Phe Asn Met Leu His Asp
145 150 155 160

Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu Ser Thr Ser Arg
165 170 175

His Val Met Ala Pro Val Met Ala His Val Asp Pro Glu Glu Pro Trp
180 185 190

Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu Asp Asn Gly Tyr
195 200 205

Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu His Leu Pro Val
210 215 220

Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln Cys Gln Leu Thr
225 230 235 240

Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro Pro Pro Cys Ala
 245 250 255

Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala Met Cys Gln Thr
 260 265 270

Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly Pro Ala Gln Ala
 275 280 285

Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu Gln Asp Phe Asn
 290 295 300

Ile Pro Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys
 305 310 315 320

Ser Arg Thr Cys Gly Gly Gly Val Gln Phe Ser Ser Arg Asp Cys Thr
 325 330 335

Arg Pro Val Pro Arg Asn Gly Gly Lys Tyr Cys Glu Gly Arg Arg Thr
 340 345 350

Arg Phe Arg Ser Cys Asn Thr Glu Asp Cys Pro Thr Gly Ser Ala Leu
 355 360 365

Thr

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 <212> DNA
 <213> Homo sapiens

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 <213> Artificial

<220>
 <223> Neopeptide

<220>
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 <223> X can be any amino acid

<400> 21

Ala Arg Gly Xaa Xaa
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<210> 22
 <211> 435
 <212> PRT
 <213> Artificial

<220>
 <223> Original catalytic construct

<400> 22

Met Ser Gln Thr Gly Ser His Pro Gly Arg Gly Leu Ala Gly Arg Trp
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Leu Trp Gly Ala Gln Pro Cys Leu Leu Leu Pro Ile Val Pro Leu Ser
 20 25 30

Trp Leu Val Trp Leu Leu Leu Leu Leu Ala Ser Leu Leu Pro Ser
 35 40 45

Ala Arg Leu Ala Ser Pro Leu Pro Arg Glu Glu Glu Ile Val Phe Pro
 50 55 60

AM101378.ST25.txt

Glu Lys Leu Asn Gly Ser Val Leu Pro Gly Ser Gly Ala Pro Ala Arg
 65 70 75 80
 Leu Leu Cys Arg Leu Gln Ala Phe Gly Glu Thr Leu Leu Leu Glu Leu
 85 90 95
 Glu Gln Asp Ser Gly Val Gln Val Glu Gly Leu Thr Val Gln Tyr Leu
 100 105 110
 Gly Gln Ala Pro Glu Leu Leu Gly Gly Ala Glu Pro Gly Thr Tyr Leu
 115 120 125
 Thr Gly Thr Ile Asn Gly Asp Pro Glu Ser Val Ala Ser Leu His Trp
 130 135 140
 Asp Gly Gly Ala Leu Leu Gly Val Leu Gln Tyr Arg Gly Ala Glu Leu
 145 150 155 160
 His Leu Gln Pro Leu Glu Gly Gly Thr Pro Asn Ser Ala Gly Gly Pro
 165 170 175
 Gly Ala His Ile Leu Arg Arg Lys Ser Pro Ala Ser Gly Gln Gly Pro
 180 185 190
 Met Cys Asn Val Lys Ala Pro Leu Gly Ser Pro Ser Pro Arg Pro Arg
 195 200 205
 Arg Ala Lys Arg Phe Ala Ser Leu Ser Arg Phe Val Glu Thr Leu Val
 210 215 220
 Val Ala Asp Asp Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg
 225 230 235 240
 Tyr Leu Leu Thr Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro
 245 250 255
 Ser Ile Arg Asn Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu
 260 265 270
 Gly Ser Gly Glu Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr
 275 280 285
 Leu Arg Ser Phe Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp
 290 295 300
 Ser Asp Pro Asp His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp
 305 310 315 320

Leu Cys Gly Val Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly
325 330 335

Thr Val Cys Asp Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly
340 345 350

Leu Gln Ser Ala Phe Thr Ala Ala His Glu Leu Gly His Val Phe Asn
355 360 365

Met Leu His Asp Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu
370 375 380

Ser Thr Ser Arg His Val Met Ala Pro Val Met Ala His Val Asp Pro
385 390 395 400

Glu Glu Pro Trp Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu
405 410 415

Asp Asn Gly Tyr Gly His Cys Leu Leu Asp Lys Pro Glu His His His
420 425 430

His His His
435

<210> 23
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<212> PRT
<213> Artificial

<220>
<223> His tag

<400> 23

His His His His His His
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<210> 24
<211> 697
<212> PRT
<213> Artificial

<220>
<223> Truncated ADAMTS4 molecule

<400> 24

Met Ser Gln Thr Gly Ser His Pro Gly Arg Gly Leu Ala Gly Arg Trp
1 5 10 15

Leu Trp Gly Ala Gln Pro Cys Leu Leu Leu Pro Ile Val Pro Leu Ser
Page 23

20

25

30

Trp Leu Val Trp Leu Leu Leu Leu Leu Ala Ser Leu Leu Pro Ser
35 40 45

Ala Arg Leu Ala Ser Pro Leu Pro Arg Glu Glu Glu Ile Val Phe Pro
50 55 60

Glu Lys Leu Asn Gly Ser Val Leu Pro Gly Ser Gly Ala Pro Ala Arg
65 70 75 80

Leu Leu Cys Arg Leu Gln Ala Phe Gly Glu Thr Leu Leu Leu Glu Leu
85 90 95

Glu Gln Asp Ser Gly Val Gln Val Glu Gly Leu Thr Val Gln Tyr Leu
100 105 110

Gly Gln Ala Pro Glu Leu Leu Gly Gly Ala Glu Pro Gly Thr Tyr Leu
115 120 125

Thr Gly Thr Ile Asn Gly Asp Pro Glu Ser Val Ala Ser Leu His Trp
130 135 140

Asp Gly Gly Ala Leu Leu Gly Val Leu Gln Tyr Arg Gly Ala Glu Leu
145 150 155 160

His Leu Gln Pro Leu Glu Gly Gly Thr Pro Asn Ser Ala Gly Gly Pro
165 170 175

Gly Ala His Ile Leu Arg Arg Lys Ser Pro Ala Ser Gly Gln Gly Pro
180 185 190

Met Cys Asn Val Lys Ala Pro Leu Gly Ser Pro Ser Pro Arg Pro Arg
195 200 205

Arg Ala Lys Arg Phe Ala Ser Leu Ser Arg Phe Val Glu Thr Leu Val
210 215 220

Val Ala Asp Asp Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg
225 230 235 240

Tyr Leu Leu Thr Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro
245 250 255

Ser Ile Arg Asn Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu
260 265 270

Gly Ser Gly Glu Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr
 275 280 285

Leu Arg Ser Phe Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp
 290 295 300

Ser Asp Pro Asp His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp
 305 310 315 320

Leu Cys Gly Val Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly
 325 330 335

Thr Val Cys Asp Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly
 340 345 350

Leu Gln Ser Ala Phe Thr Ala Ala His Glu Leu Gly His Val Phe Asn
 355 360 365

Met Leu His Asp Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu
 370 375 380

Ser Thr Ser Arg His Val Met Ala Pro Val Met Ala His Val Asp Pro
 385 390 395 400

Glu Glu Pro Trp Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu
 405 410 415

Asp Asn Gly Tyr Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu
 420 425 430

His Leu Pro Val Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln
 435 440 445

Cys Gln Leu Thr Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro
 450 455 460

Pro Pro Cys Ala Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala
 465 470 475 480

Met Cys Gln Thr Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly
 485 490 495

Pro Ala Gln Ala Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu
 500 505 510

Gln Asp Phe Asn Ile Pro Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro
 515 520 525

Trp Gly Asp Cys Ser Arg Thr Cys Gly Gly Gly Val Gln Phe Ser Ser
 530 535 540

Arg Asp Cys Thr Arg Pro Val Pro Arg Asn Gly Gly Lys Tyr Cys Glu
 545 550 555 560

Gly Arg Arg Thr Arg Phe Arg Ser Cys Asn Thr Glu Asp Cys Pro Thr
 565 570 575

Gly Ser Ala Leu Thr Phe Arg Glu Glu Gln Cys Ala Ala Tyr Asn His
 580 585 590

Arg Thr Asp Leu Phe Lys Ser Phe Pro Gly Pro Met Asp Trp Val Pro
 595 600 605

Arg Tyr Thr Gly Val Ala Pro Gln Asp Gln Cys Lys Leu Thr Cys Gln
 610 615 620

Ala Arg Ala Leu Gly Tyr Tyr Tyr Val Leu Glu Pro Arg Val Val Asp
 625 630 635 640

Gly Thr Pro Cys Ser Pro Asp Ser Ser Ser Val Cys Val Gln Gly Arg
 645 650 655

Cys Ile His Ala Gly Cys Asp Arg Ile Ile Gly Ser Lys Lys Lys Phe
 660 665 670

Asp Lys Cys Met Val Cys Gly Gly Asp Gly Ser Gly Cys Ser Gly Ser
 675 680 685

Ala Trp Ser His Pro Gln Phe Glu Lys
 690 695

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 <212> PRT
 <213> Artificial

<220>
 <223> Construct C tag sequence

<400> 25

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<210> 26
 <211> 686
 <212> PRT
 <213> Artificial

<220>

<223> Truncated ADAMTS4 construct D

<400> 26

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Leu Trp Gly Ala Gln Pro Cys Leu Leu Leu Pro Ile Val Pro Leu Ser
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Trp Leu Val Trp Leu Leu Leu Leu Leu Ala Ser Leu Leu Pro Ser
 35 40 45

Ala Arg Leu Ala Ser Pro Leu Pro Arg Glu Glu Glu Ile Val Phe Pro
 50 55 60

Glu Lys Leu Asn Gly Ser Val Leu Pro Gly Ser Gly Ala Pro Ala Arg
 65 70 75 80

Leu Leu Cys Arg Leu Gln Ala Phe Gly Glu Thr Leu Leu Leu Glu Leu
 85 90 95

Glu Gln Asp Ser Gly Val Gln Val Glu Gly Leu Thr Val Gln Tyr Leu
 100 105 110

Gly Gln Ala Pro Glu Leu Leu Gly Gly Ala Glu Pro Gly Thr Tyr Leu
 115 120 125

Thr Gly Thr Ile Asn Gly Asp Pro Glu Ser Val Ala Ser Leu His Trp
 130 135 140

Asp Gly Gly Ala Leu Leu Gly Val Leu Gln Tyr Arg Gly Ala Glu Leu
 145 150 155 160

His Leu Gln Pro Leu Glu Gly Gly Thr Pro Asn Ser Ala Gly Gly Pro
 165 170 175

Gly Ala His Ile Leu Arg Arg Lys Ser Pro Ala Ser Gly Gln Gly Pro
 180 185 190

Met Cys Asn Val Lys Ala Pro Leu Gly Ser Pro Ser Pro Arg Pro Arg
 195 200 205

Arg Ala Lys Arg Phe Ala Ser Leu Ser Arg Phe Val Glu Thr Leu Val
 210 215 220

Val Ala Asp Asp Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg

225 230 235 240

Tyr Leu Leu Thr Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro
245 250 255

Ser Ile Arg Asn Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu
260 265 270

Gly ser Gly Glu Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr
275 280 285

Leu Arg Ser Phe Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp
290 295 300

Ser Asp Pro Asp His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp
305 310 315 320

Leu Cys Gly Val Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly
325 330 335

Thr Val Cys Asp Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly
340 345 350

Leu Gln Ser Ala Phe Thr Ala Ala His Glu Leu Gly His Val Phe Asn
355 360 365

Met Leu His Asp Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu
370 375 380

Ser Thr Ser Arg His Val Met Ala Pro Val Met Ala His Val Asp Pro
385 390 395 400

Glu Glu Pro Trp Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu
405 410 415

Asp Asn Gly Tyr Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu
420 425 430

His Leu Pro Val Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln
435 440 445

Cys Gln Leu Thr Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro
450 455 460

Pro Cys Ala Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala
465 470 475 480

Met Cys Gln Thr Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly
 485 490 495

Pro Ala Gln Ala Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu
 500 505 510

Gln Asp Phe Asn Ile Pro Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro
 515 520 525

Trp Gly Asp Cys Ser Arg Thr Cys Gly Gly Gly Val Gln Phe Ser Ser
 530 535 540

Arg Asp Cys Thr Arg Pro Val Pro Arg Asn Gly Gly Lys Tyr Cys Glu
 545 550 555 560

Gly Arg Arg Thr Arg Phe Arg Ser Cys Asn Thr Glu Asp Cys Pro Thr
 565 570 575

Gly Ser Ala Leu Thr Phe Arg Glu Glu Gln Cys Ala Ala Tyr Asn His
 580 585 590

Arg Thr Asp Leu Phe Lys Ser Phe Pro Gly Pro Met Asp Trp Val Pro
 595 600 605

Arg Tyr Thr Gly Val Ala Pro Gln Asp Gln Cys Lys Leu Thr Cys Gln
 610 615 620

Ala Arg Ala Leu Gly Tyr Tyr Tyr Val Leu Glu Pro Arg Val Val Asp
 625 630 635 640

Gly Thr Pro Cys Ser Pro Asp Ser Ser Ser Val Cys Val Gln Gly Arg
 645 650 655

Cys Ile His Ala Gly Cys Asp Arg Ile Ile Gly Ser Lys Lys Lys Phe
 660 665 670

Asp Lys Cys Met Val Cys Gly Gly Asp Gly Ser Gly Cys Ser
 675 680 685

<210> 27
 <211> 858
 <212> PRT
 <213> Artificial

<220>
 <223> modified ADAMTS4 molecule

<400> 27

Met Ser Gln Thr Gly Ser His Pro Gly Arg Gly Leu Ala Gly Arg Trp
 Page 29

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 Leu Trp Gly Ala Gln Pro Cys Leu Leu Leu Pro Ile Val Pro Leu Ser
 20 25 30
 Trp Leu Val Trp Leu Leu Leu Leu Leu Ala Ser Leu Leu Pro Ser
 35 40 45
 Ala Arg Leu Ala Ser Pro Leu Pro Arg Glu Glu Glu Ile Val Phe Pro
 50 55 60
 Glu Lys Leu Asn Gly Ser Val Leu Pro Gly Ser Gly Ala Pro Ala Arg
 65 70 75 80
 Leu Leu Cys Arg Leu Gln Ala Phe Gly Glu Thr Leu Leu Leu Glu Leu
 85 90 95
 Glu Gln Asp Ser Gly Val Gln Val Glu Gly Leu Thr Val Gln Tyr Leu
 100 105 110
 Gly Gln Ala Pro Glu Leu Leu Gly Gly Ala Glu Pro Gly Thr Tyr Leu
 115 120 125
 Thr Gly Thr Ile Asn Gly Asp Pro Glu Ser Val Ala Ser Leu His Trp
 130 135 140
 Asp Gly Gly Ala Leu Leu Gly Val Leu Gln Tyr Arg Gly Ala Glu Leu
 145 150 155 160
 His Leu Gln Pro Leu Glu Gly Gly Thr Pro Asn Ser Ala Gly Gly Pro
 165 170 175
 Gly Ala His Ile Leu Arg Arg Lys Ser Pro Ala Ser Gly Gln Gly Pro
 180 185 190
 Met Cys Asn Val Lys Ala Pro Leu Gly Ser Pro Ser Pro Arg Pro Arg
 195 200 205
 Arg Ala Lys Arg Phe Ala Ser Leu Ser Arg Phe Val Glu Thr Leu Val
 210 215 220
 Val Ala Asp Asp Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg
 225 230 235 240
 Tyr Leu Leu Thr Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro
 245 250 255

Ser Ile Arg Asn Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu
 260 265 270

Gly Ser Gly Glu Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr
 275 280 285

Leu Arg Ser Phe Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp
 290 295 300

Ser Asp Pro Asp His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp
 305 310 315 320

Leu Cys Gly Val Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly
 325 330 335

Thr Val Cys Asp Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly
 340 345 350

Leu Gln Ser Ala Phe Thr Ala Ala His Glu Leu Gly His Val Phe Asn
 355 360 365

Met Leu His Asp Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu
 370 375 380

Ser Thr Ser Arg His Val Met Ala Pro Val Met Ala His Val Asp Pro
 385 390 395 400

Glu Glu Pro Trp Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu
 405 410 415

Asp Asn Gly Tyr Gly His Cys Leu Leu Asp Lys Pro Glu Gly Ser Gly
 420 425 430

Ser Gly Asp Asp Asp Asp Lys Ala Pro Leu His Leu Pro Val Thr Phe
 435 440 445

Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln Cys Gln Leu Thr Phe Gly
 450 455 460

Pro Asp Ser Arg His Cys Pro Gln Leu Pro Pro Pro Cys Ala Ala Leu
 465 470 475 480

Trp Cys Ser Gly His Leu Asn Gly His Ala Met Cys Gln Thr Lys His
 485 490 495

Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly Pro Ala Gln Ala Cys Met
 500 505 510

Gly Gly Arg Cys Leu His Met Asp Gln Leu Gln Asp Phe Asn Ile Pro
 515 520 525

Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys Ser Arg
 530 535 540

Thr Cys Gly Gly Gly Val Gln Phe Ser Ser Arg Asp Cys Thr Arg Pro
 545 550 555 560

Val Pro Arg Asn Gly Gly Lys Tyr Cys Glu Gly Arg Arg Thr Arg Phe
 565 570 575

Arg Ser Cys Asn Thr Glu Asp Cys Pro Thr Gly Ser Ala Leu Thr Phe
 580 585 590

Arg Glu Glu Gln Cys Ala Ala Tyr Asn His Arg Thr Asp Leu Phe Lys
 595 600 605

Ser Phe Pro Gly Pro Met Asp Trp Val Pro Arg Tyr Thr Gly Val Ala
 610 615 620

Pro Gln Asp Gln Cys Lys Leu Thr Cys Gln Ala Arg Ala Leu Gly Tyr
 625 630 635 640

Tyr Tyr Val Leu Glu Pro Arg Val Val Asp Gly Thr Pro Cys Ser Pro
 645 650 655

Asp Ser Ser Ser Val Cys Val Gln Gly Arg Cys Ile His Ala Gly Cys
 660 665 670

Asp Arg Ile Ile Gly Ser Lys Lys Lys Phe Asp Lys Cys Met Val Cys
 675 680 685

Gly Gly Asp Gly Ser Gly Cys Ser Lys Gln Ser Gly Ser Phe Arg Lys
 690 695 700

Phe Arg Tyr Gly Tyr Asn Asn Val Val Thr Ile Pro Ala Gly Ala Thr
 705 710 715 720

His Ile Leu Val Arg Gln Gln Gly Asn Pro Gly His Arg Ser Ile Tyr
 725 730 735

Leu Ala Leu Lys Leu Pro Asp Gly Ser Tyr Ala Leu Asn Gly Glu Tyr
 740 745 750

Thr Leu Met Pro Ser Pro Thr Asp Val Val Leu Pro Gly Ala Val Ser
 755 760 765

Leu Arg Tyr Ser Gly Ala Thr Ala Ala Ser Glu Thr Leu Ser Gly His
770 775 780

Gly Pro Leu Ala Gln Pro Leu Thr Leu Gln Val Leu Val Ala Gly Asn
785 790 795 800

Pro Gln Asp Thr Arg Leu Arg Tyr Ser Phe Phe Val Pro Arg Pro Thr
805 810 815

Pro Ser Thr Pro Arg Pro Thr Pro Gln Asp Trp Leu His Arg Arg Ala
820 825 830

Gln Ile Leu Glu Ile Leu Arg Arg Arg Pro Trp Ala Gly Arg Lys Gly
835 840 845

Ser Ala Trp Ser His Pro Gln Phe Glu Lys
850 855

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<212> PRT
<213> Artificial

<220>
<223> construct E insertion sequence
<400> 28

Gly Ser Gly Ser Gly Asp Asp Asp Asp Lys
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<210> 29
<211> 846
<212> PRT
<213> Artificial

<220>
<223> ADAMTS4 with active-site mutation
<400> 29

Met Ser Gln Thr Gly Ser His Pro Gly Arg Gly Leu Ala Gly Arg Trp
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Leu Trp Gly Ala Gln Pro Cys Leu Leu Leu Pro Ile Val Pro Leu Ser
20 25 30

Trp Leu Val Trp Leu Leu Leu Leu Leu Ala Ser Leu Leu Pro Ser
35 40 45

Ala Arg Leu Ala Ser Pro Leu Pro Arg Glu Glu Glu Ile Val Phe Pro
Page 33

50

55

60

Glu Lys Leu Asn Gly Ser Val Leu Pro Gly Ser Gly Ala Pro Ala Arg
65 70 75 80

Leu Leu Cys Arg Leu Gln Ala Phe Gly Glu Thr Leu Leu Leu Glu Leu
85 90 95

Glu Gln Asp Ser Gly Val Gln Val Glu Gly Leu Thr Val Gln Tyr Leu
100 105 110

Gly Gln Ala Pro Glu Leu Leu Gly Gly Ala Glu Pro Gly Thr Tyr Leu
115 120 125

Thr Gly Thr Ile Asn Gly Asp Pro Glu Ser Val Ala Ser Leu His Trp
130 135 140

Asp Gly Gly Ala Leu Leu Gly Val Leu Gln Tyr Arg Gly Ala Glu Leu
145 150 155 160

His Leu Gln Pro Leu Glu Gly Gly Thr Pro Asn Ser Ala Gly Gly Pro
165 170 175

Gly Ala His Ile Leu Arg Arg Lys Ser Pro Ala Ser Gly Gln Gly Pro
180 185 190

Met Cys Asn Val Lys Ala Pro Leu Gly Ser Pro Ser Pro Arg Pro Arg
195 200 205

Arg Ala Lys Arg Phe Ala Ser Leu Ser Arg Phe Val Glu Thr Leu Val
210 215 220

Val Ala Asp Asp Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg
225 230 235 240

Tyr Leu Leu Thr Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro
245 250 255

Ser Ile Arg Asn Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu
260 265 270

Gly Ser Gly Glu Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr
275 280 285

Leu Arg Ser Phe Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp
290 295 300

Ser Asp Pro Asp His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp
 305 310 315 320

Leu Cys Gly Val Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly
 325 330 335

Thr Val Cys Asp Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly
 340 345 350

Leu Gln Ser Ala Phe Thr Ala Ala His Gln Leu Gly His Val Phe Asn
 355 360 365

Met Leu His Asp Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu
 370 375 380

Ser Thr Ser Arg His Val Met Ala Pro Val Met Ala His Val Asp Pro
 385 390 395 400

Glu Glu Pro Trp Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu
 405 410 415

Asp Asn Gly Tyr Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu
 420 425 430

His Leu Pro Val Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln
 435 440 445

Cys Gln Leu Thr Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro
 450 455 460

Pro Pro Cys Ala Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala
 465 470 475 480

Met Cys Gln Thr Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly
 485 490 495

Pro Ala Gln Ala Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu
 500 505 510

Gln Asp Phe Asn Ile Pro Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro
 515 520 525

Trp Gly Asp Cys Ser Arg Thr Cys Gly Gly Gly Val Gln Phe Ser Ser
 530 535 540

Arg Asp Cys Thr Arg Pro Val Pro Arg Asn Gly Gly Lys Tyr Cys Glu
 545 550 555 560

Gly Arg Arg Thr Arg Phe Arg Ser Cys Asn Thr Glu Asp Cys Pro Thr
565 570 575

Gly Ser Ala Leu Thr Phe Arg Glu Glu Gln Cys Ala Ala Tyr Asn His
580 585 590

Arg Thr Asp Leu Phe Lys Ser Phe Pro Gly Pro Met Asp Trp Val Pro
595 600 605

Arg Tyr Thr Gly Val Ala Pro Gln Asp Gln Cys Lys Leu Thr Cys Gln
610 615 620

Ala Arg Ala Leu Gly Tyr Tyr Tyr Val Leu Glu Pro Arg Val Val Asp
625 630 635 640

Gly Thr Pro Cys Ser Pro Asp Ser Ser Ser Val Cys Val Gln Gly Arg
645 650 655

Cys Ile His Ala Gly Cys Asp Arg Ile Ile Gly Ser Lys Lys Lys Phe
660 665 670

Asp Lys Cys Met Val Cys Gly Gly Asp Gly Ser Gly Cys Ser Lys Gln
675 680 685

Ser Gly Ser Phe Arg Lys Phe Arg Tyr Gly Tyr Asn Asn Val Val Thr
690 695 700

Ile Pro Ala Gly Ala Thr His Ile Leu Val Arg Gln Gln Gly Asn Pro
705 710 715 720

Gly His Arg Ser Ile Tyr Leu Ala Leu Lys Leu Pro Asp Gly Ser Tyr
725 730 735

Ala Leu Asn Gly Glu Tyr Thr Leu Met Pro Ser Pro Thr Asp Val Val
740 745 750

Leu Pro Gly Ala Val Ser Leu Arg Tyr Ser Gly Ala Thr Ala Ala Ser
755 760 765

Glu Thr Leu Ser Gly His Gly Pro Leu Ala Gln Pro Leu Thr Leu Gln
770 775 780

Val Leu Val Ala Gly Asn Pro Gln Asp Thr Arg Leu Arg Tyr Ser Phe
785 790 795 800

Phe Val Pro Arg Pro Thr Pro Ser Thr Pro Arg Pro Thr Pro Gln Asp
805 810 815

Trp Leu His Arg Arg Ala Gln Ile Leu Glu Ile Leu Arg Arg Arg Pro
820 825 830

Trp Ala Gly Arg Lys Val Asp Tyr Lys Asp Asp Asp Asp Lys
835 840 845

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<211> 9
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<213> Artificial

<220>
<223> FLAG tag sequence

<400> 30

Val Asp Tyr Lys Asp Asp Asp Asp Lys
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<210> 31
<211> 584
<212> PRT
<213> Artificial

<220>
<223> Truncated ADAMTS4 ASM

<400> 31

Met Ser Gln Thr Gly Ser His Pro Gly Arg Gly Leu Ala Gly Arg Trp
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Leu Trp Gly Ala Gln Pro Cys Leu Leu Leu Pro Ile Val Pro Leu Ser
20 25 30

Trp Leu Val Trp Leu Leu Leu Leu Leu Ala Ser Leu Leu Pro Ser
35 40 45

Ala Arg Leu Ala Ser Pro Leu Pro Arg Glu Glu Glu Ile Val Phe Pro
50 55 60

Glu Lys Leu Asn Gly Ser Val Leu Pro Gly Ser Gly Ala Pro Ala Arg
65 70 75 80

Leu Leu Cys Arg Leu Gln Ala Phe Gly Glu Thr Leu Leu Leu Glu Leu
85 90 95

Glu Gln Asp Ser Gly Val Gln Val Glu Gly Leu Thr Val Gln Tyr Leu
100 105 110

Gly Gln Ala Pro Glu Leu Leu Gly Gly Ala Glu Pro Gly Thr Tyr Leu
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115

120

Thr Gly Thr Ile Asn Gly Asp Pro Glu Ser Val Ala Ser Leu His Trp
130 135 140

Asp Gly Gly Ala Leu Leu Gly Val Leu Gln Tyr Arg Gly Ala Glu Leu
145 150 155 160

His Leu Gln Pro Leu Glu Gly Gly Thr Pro Asn Ser Ala Gly Gly Pro
165 170 175

Gly Ala His Ile Leu Arg Arg Lys Ser Pro Ala Ser Gly Gln Gly Pro
180 185 190

Met Cys Asn Val Lys Ala Pro Leu Gly Ser Pro Ser Pro Arg Pro Arg
195 200 205

Arg Ala Lys Arg Phe Ala Ser Leu Ser Arg Phe Val Glu Thr Leu Val
210 215 220

Val Ala Asp Asp Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg
225 230 235 240

Tyr Leu Leu Thr Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro
245 250 255

Ser Ile Arg Asn Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu
260 265 270

Gly Ser Gly Glu Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr
275 280 285

Leu Arg Ser Phe Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp
290 295 300

Ser Asp Pro Asp His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp
305 310 315 320

Leu Cys Gly Val Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly
325 330 335

Thr Val Cys Asp Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly
340 345 350

Leu Gln Ser Ala Phe Thr Ala Ala His Gln Leu Gly His Val Phe Asn
355 360 365

Met Leu His Asp Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu
 370 375 380

Ser Thr Ser Arg His Val Met Ala Pro Val Met Ala His Val Asp Pro
 385 390 395 400

Glu Glu Pro Trp Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu
 405 410 415

Asp Asn Gly Tyr Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu
 420 425 430

His Leu Pro Val Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln
 435 440 445

Cys Gln Leu Thr Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro
 450 455 460

Pro Pro Cys Ala Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala
 465 470 475 480

Met Cys Gln Thr Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly
 485 490 495

Pro Ala Gln Ala Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu
 500 505 510

Gln Asp Phe Asn Ile Pro Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro
 515 520 525

Trp Gly Asp Cys Ser Arg Thr Cys Gly Gly Gly Val Gln Phe Ser Ser
 530 535 540

Arg Asp Cys Thr Arg Pro Val Pro Arg Asn Gly Gly Lys Tyr Cys Glu
 545 550 555 560

Gly Arg Arg Thr Arg Phe Arg Ser Cys Asn Thr Glu Asp Cys Pro Val
 565 570 575

Asp Tyr Lys Asp Asp Asp Asp Lys
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 <212> PRT
 <213> Artificial

<220>
 <223> Truncated ADAMTS4 ASM

<400> 32

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 35 40 45
 Ala Arg Leu Ala Ser Pro Leu Pro Arg Glu Glu Glu Ile Val Phe Pro
 50 55 60
 Glu Lys Leu Asn Gly Ser Val Leu Pro Gly Ser Gly Ala Pro Ala Arg
 65 70 75 80
 Leu Leu Cys Arg Leu Gln Ala Phe Gly Glu Thr Leu Leu Leu Glu Leu
 85 90 95
 Glu Gln Asp Ser Gly Val Gln Val Glu Gly Leu Thr Val Gln Tyr Leu
 100 105 110
 Gly Gln Ala Pro Glu Leu Leu Gly Gly Ala Glu Pro Gly Thr Tyr Leu
 115 120 125
 Thr Gly Thr Ile Asn Gly Asp Pro Glu Ser Val Ala Ser Leu His Trp
 130 135 140
 Asp Gly Gly Ala Leu Leu Gly Val Leu Gln Tyr Arg Gly Ala Glu Leu
 145 150 155 160
 His Leu Gln Pro Leu Glu Gly Gly Thr Pro Asn Ser Ala Gly Gly Pro
 165 170 175
 Gly Ala His Ile Leu Arg Arg Lys Ser Pro Ala Ser Gly Gln Gly Pro
 180 185 190
 Met Cys Asn Val Lys Ala Pro Leu Gly Ser Pro Ser Pro Arg Pro Arg
 195 200 205
 Arg Ala Lys Arg Phe Ala Ser Leu Ser Arg Phe Val Glu Thr Leu Val
 210 215 220
 Val Ala Asp Asp Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg
 225 230 235 240

AM101378.ST25.txt

Tyr Leu Leu Thr Val Met Ala Ala Ala Lys Ala Phe Lys His Pro
245 250 255

Ser Ile Arg Asn Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu
260 265 270

Gly Ser Gly Glu Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr
275 280 285

Leu Arg Ser Phe Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp
290 295 300

Ser Asp Pro Asp His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp
305 310 315 320

Leu Cys Gly Val Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly
325 330 335

Thr Val Cys Asp Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly
340 345 350

Leu Gln Ser Ala Phe Thr Ala Ala His Gln Leu Gly His Val Phe Asn
355 360 365

Met Leu His Asp Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu
370 375 380

Ser Thr Ser Arg His Val Met Ala Pro Val Met Ala His Val Asp Pro
385 390 395 400

Glu Glu Pro Trp Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu
405 410 415

Asp Asn Gly Tyr Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu
420 425 430

His Leu Pro Val Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln
435 440 445

Cys Gln Leu Thr Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro
450 455 460

Pro Pro Cys Ala Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala
465 470 475 480

Met Cys Gln Thr Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly
485 490 495

AM101378.ST25.txt

Pro Ala Gln Ala Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu
500 505 510

Gln Asp Phe Asn Ile Pro Gln Ala Val Asp Tyr Lys Asp Asp Asp Asp
515 520 525

Lys

<210> 33
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<212> DNA
<213> Artificial

<220>
<223> PCR primer

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<210> 34
<211> 37
<212> DNA
<213> Artificial

<220>
<223> PCR primer

<400> 34
tattatgtct actgggcagt cctcagtgtt gcaggag 37

<210> 35
<211> 37
<212> DNA
<213> Artificial

<220>
<223> PCR primer

<400> 35
tattatgtct acagcctgtg gaatattgaa gtcctgg 37

<210> 36
<211> 53
<212> DNA
<213> Artificial

<220>
<223> Flag1 sequence

<400> 36
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<210> 37
<211> 53

<212> DNA
<213> Artificial

<220>
<223> Flag2 sequence

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<210> 38
<211> 3916
<212> DNA
<213> Artificial

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<223> cloning vector

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AM101378.ST25.txt

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agcgggaagg gactggctgc tattgggcca agtgccgggg caggatctcc tgtcatctcg	1620
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caacgactgt ggccggctgg gtgtggcgga ccgctatcag gacatagcgt tggatacccg	1980
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cgccgctccc gattcgcagc gcatcgctt ctatcgctt cttgacgagt tcttctgaat	2100
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Ala Arg Leu Ala Ser Pro Leu Pro Arg Glu Glu Glu Ile Val Phe Pro
50 55 60

Glu Lys Leu Asn Gly Ser Val Leu Pro Gly Ser Gly Ala Pro Ala Arg
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Leu Leu Cys Arg Leu Gln Ala Phe Gly Glu Thr Leu Leu Leu Glu Leu
85 90 95

Glu Gln Asp Ser Gly Val Gln Val Glu Gly Leu Thr Val Gln Tyr Leu
100 105 110

Gly Gln Ala Pro Glu Leu Leu Gly Gly Ala Glu Pro Gly Thr Tyr Leu
115 120 125

Thr Gly Thr Ile Asn Gly Asp Pro Glu Ser Val Ala Ser Leu His Trp
130 135 140

Asp Gly Gly Ala Leu Leu Gly Val Leu Gln Tyr Arg Gly Ala Glu Leu
145 150 155 160

His Leu Gln Pro Leu Glu Gly Gly Thr Pro Asn Ser Ala Gly Gly Pro
165 170 175

Gly Ala His Ile Leu Arg Arg Lys Ser Pro Ala Ser Gly Gln Gly Pro
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Met Cys Asn Val Lys Ala Pro Leu Gly Ser Pro Ser Pro Arg Pro Arg
195 200 205

Arg Ala Lys Arg Phe Ala Ser Leu Ser Arg Phe Val Glu Thr Leu Val
210 215 220

Val Ala Asp Asp Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg
225 230 235 240

Tyr Leu Leu Thr Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro
245 250 255

Ser Ile Arg Asn Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu
260 265 270

Gly Ser Gly Glu Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr
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Leu Arg Ser Phe Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp
290 295 300

Ser Asp Pro Asp His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp
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Leu Cys Gly Val Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly
 325 330 335

Thr Val Cys Asp Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly
 340 345 350

Leu Gln Ser Ala Phe Thr Ala Ala His Gln Leu Gly His Val Phe Asn
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Met Leu His Asp Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu
 370 375 380

Ser Thr Ser Arg His Val Met Ala Pro Val Met Ala His Val Asp Pro
 385 390 395 400

Glu Glu Pro Trp Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu
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Asp Asn Gly Tyr Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu
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His Leu Pro Val Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln
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Cys Gln Leu Thr Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro
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Pro Pro Cys Ala Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala
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Met Cys Gln Thr Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly
 485 490 495

Pro Ala Gln Ala Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu
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Gln Asp Phe Asn Ile Pro Gln Trp Ser His Pro Gln Phe Glu Lys Ala
 515 520 525

Gly Gly Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys Ser Arg Thr Cys
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Arg Asn Gly Gly Lys Tyr Cys Glu Gly Arg Arg Thr Arg Phe Arg Ser
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Cys Asn Thr Glu Asp Cys Pro Thr Gly Ser Ala Leu Thr Phe Arg Glu
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Glu Gln Cys Ala Ala Tyr Asn His Arg Thr Asp Leu Phe Lys Ser Phe
595 600 605

Pro Gly Pro Met Asp Trp Val Pro Arg Tyr Thr Gly Val Ala Pro Gln
610 615 620

Asp Gln Cys Lys Leu Thr Cys Gln Ala Arg Ala Leu Gly Tyr Tyr Tyr
625 630 635 640

Val Leu Glu Pro Arg Val Val Asp Gly Thr Pro Cys Ser Pro Asp Ser
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Ser Ser Val Cys Val Gln Gly Arg Cys Ile His Ala Gly Cys Asp Arg
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Ile Ile Gly Ser Lys Lys Lys Phe Asp Lys Cys Met Val Cys Gly Gly
675 680 685

Asp Gly Ser Gly Cys Ser Lys Gln Ser Gly Ser Phe Arg Lys Phe Arg
690 695 700

Tyr Gly Tyr Asn Asn Val Val Thr Ile Pro Ala Gly Ala Thr His Ile
710 715 720

Leu Val Arg Gln Gln Gly Asn Pro Gly His Arg Ser Ile Tyr Leu Ala
725 730 735

Leu Lys Leu Pro Asp Gly Ser Tyr Ala Leu Asn Gly Glu Tyr Thr Leu
740 745 750

Met Pro Ser Pro Thr Asp Val Val Leu Pro Gly Ala Val Ser Leu Arg
755 760 765

Tyr Ser Gly Ala Thr Ala Ala Ser Glu Thr Leu Ser Gly His Gly Pro
770 775 780

Leu Ala Gln Pro Leu Thr Leu Gln Val Leu Val Ala Gly Asn Pro Gln
785 790 795 800

Asp Thr Arg Leu Arg Tyr Ser Phe Phe Val Pro Arg Pro Thr Pro Ser
805 810 815

Thr Pro Arg Pro Thr Pro Gln Asp Trp Leu His Arg Arg Ala Gln Ile
Page 51

820

825

830

Leu Glu Ile Leu Arg Arg Arg Pro Trp Ala Gly Arg Lys
 835 840 845

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68

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20 25 30Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro Ser Ile Arg Asn
35 40 45Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu Gly Ser Gly Glu
50 55 60Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr Leu Arg Ser Phe
65 70 75 80Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp Ser Asp Pro Asp
85 90 95His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Val
100 105 110Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp
115 120 125Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly Leu Gln Ser Ala
130 135 140Phe Thr Ala Ala His Glu Leu Gly His Val Phe Asn Met Leu His Asp
145 150 155 160Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu Ser Thr Ser Arg
165 170 175His Val Met Ala Pro Val Met Ala His Val Asp Pro Glu Glu Pro Trp
Page 53

180

190

Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu Asp Asn Gly Tyr
195 200 205

Gly His Cys Leu Leu Asp Lys Pro Glu His His His His His His
210 215 220

<210> 47
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Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg Tyr Leu Leu Thr
20 25 30

Val Met Ala Ala Ala Lys Ala Phe Lys His Pro Ser Ile Arg Asn
35 40 45

Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu Gly Ser Gly Glu
50 55 60

Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr Leu Arg Ser Phe
65 70 75 80

Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp Ser Asp Pro Asp
85 90 95

His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Val
100 105 110

Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp
115 120 125

Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly Leu Gln Ser Ala
130 135 140

Phe Thr Ala Ala His Glu Leu Gly His Val Phe Asn Met Leu His Asp
145 150 155 160

Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu Ser Thr Ser Arg
165 170 175

His Val Met Ala Pro Val Met Ala His Val Asp Pro Glu Glu Pro Trp
 180 185 190

Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu Asp Asn Gly Tyr
 195 200 205

Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu His Leu Pro Val
 210 215 220

Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln Cys Gln Leu Thr
 225 230 235 240

Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro Pro Pro Cys Ala
 245 250 255

Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala Met Cys Gln Thr
 260 265 270

Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly Pro Ala Gln Ala
 275 280 285

Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu Gln Asp Phe Asn
 290 295 300

Ile Pro Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys
 310 315 320

Ser Arg Thr Cys Gly Gly Gly Val Gln Phe Ser Ser Arg Asp Cys Thr
 325 330 335

Arg Pro Val Pro Arg Asn Gly Gly Lys Tyr Cys Glu Gly Arg Arg Thr
 340 345 350

Arg Phe Arg Ser Cys Asn Thr Glu Asp Cys Pro Thr Gly Ser Ala Leu
 355 360 365

Thr Phe Arg Glu Glu Gln Cys Ala Ala Tyr Asn His Arg Thr Asp Leu
 370 375 380

Phe Lys Ser Phe Pro Gly Pro Met Asp Trp Val Pro Arg Tyr Thr Gly
 385 390 395 400

Val Ala Pro Gln Asp Gln Cys Lys Leu Thr Cys Gln Ala Arg Ala Leu
 405 410 415

Gly Tyr Tyr Tyr Val Leu Glu Pro Arg Val Val Asp Gly Thr Pro Cys
 Page 55

420

425

430

Ser Pro Asp Ser Ser Ser Val Cys Val Gln Gly Arg Cys Ile His Ala
 435 440 445

Gly Cys Asp Arg Ile Ile Gly Ser Lys Lys Lys Phe Asp Lys Cys Met
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Val Cys Gly Gly Asp Gly Ser Gly Cys Ser Gly Ser Ala Trp Ser His
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Pro Gln Phe Glu Lys
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Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro Ser Ile Arg Asn
 35 40 45

Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu Gly Ser Gly Glu
 50 55 60

Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr Leu Arg Ser Phe
 65 70 75 80

Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp Ser Asp Pro Asp
 85 90 95

His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Val
 100 105 110

Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp
 115 120 125

Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly Leu Gln Ser Ala
 130 135 140

Phe Thr Ala Ala His Glu Leu Gly His Val Phe Asn Met Leu His Asp
145 150 155 160

Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu Ser Thr Ser Arg
165 170 175

His Val Met Ala Pro Val Met Ala His Val Asp Pro Glu Glu Pro Trp
180 185 190

Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu Asp Asn Gly Tyr
195 200 205

Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu His Leu Pro Val
210 215 220

Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln Cys Gln Leu Thr
225 230 235 240

Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro Pro Pro Cys Ala
245 250 255

Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala Met Cys Gln Thr
260 265 270

Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly Pro Ala Gln Ala
275 280 285

Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu Gln Asp Phe Asn
290 295 300

Ile Pro Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys
305 310 315 320

Ser Arg Thr Cys Gly Gly Gly Val Gln Phe Ser Ser Arg Asp Cys Thr
325 330 335

Arg Pro Val Pro Arg Asn Gly Gly Lys Tyr Cys Glu Gly Arg Arg Thr
340 345 350

Arg Phe Arg Ser Cys Asn Thr Glu Asp Cys Pro Thr Gly Ser Ala Leu
355 360 365

Thr Phe Arg Glu Glu Gln Cys Ala Ala Tyr Asn His Arg Thr Asp Leu
370 375 380

Phe Lys Ser Phe Pro Gly Pro Met Asp Trp Val Pro Arg Tyr Thr Gly
Page 57

385

390

395

400

Val Ala Pro Gln Asp Gln Cys Lys Leu Thr Cys Gln Ala Arg Ala Leu
 405 410 415

Gly Tyr Tyr Tyr Val Leu Glu Pro Arg Val Val Asp Gly Thr Pro Cys
 420 425 430

Ser Pro Asp Ser Ser Ser Val Cys Val Gln Gly Arg Cys Ile His Ala
 435 440 445

Gly Cys Asp Arg Ile Ile Gly Ser Lys Lys Lys Phe Asp Lys Cys Met
 450 455 460

Val Cys Gly Gly Asp Gly Ser Gly Cys Ser
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 20 25 30

Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro Ser Ile Arg Asn
 35 40 45

Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu Gly Ser Gly Glu
 50 55 60

Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr Leu Arg Ser Phe
 65 70 75 80

Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp Ser Asp Pro Asp
 85 90 95

His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Val
 100 105 110

Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp
 115 120 125

Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly Leu Gln Ser Ala
130 135 140

Phe Thr Ala Ala His Glu Leu Gly His Val Phe Asn Met Leu His Asp
145 150 155 160

Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu Ser Thr Ser Arg
165 170 175

His Val Met Ala Pro Val Met Ala His Val Asp Pro Glu Glu Pro Trp
180 185 190

Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu Asp Asn Gly Tyr
195 200 205

Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu His Leu Pro Val
210 215 220

Gly Ser Gly Ser Gly Asp Asp Asp Asp Lys Thr Phe Pro Gly Lys Asp
225 230 235 240

Tyr Asp Ala Asp Arg Gln Cys Gln Leu Thr Phe Gly Pro Asp Ser Arg
245 250 255

His Cys Pro Gln Leu Pro Pro Pro Cys Ala Ala Leu Trp Cys Ser Gly
260 265 270

His Leu Asn Gly His Ala Met Cys Gln Thr Lys His Ser Pro Trp Ala
275 280 285

Asp Gly Thr Pro Cys Gly Pro Ala Gln Ala Cys Met Gly Gly Arg Cys
290 295 300

Leu His Met Asp Gln Leu Gln Asp Phe Asn Ile Pro Gln Ala Gly Gly
305 310 315 320

Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys Ser Arg Thr Cys Gly Gly
325 330 335

Gly Val Gln Phe Ser Ser Arg Asp Cys Thr Arg Pro Val Pro Arg Asn
340 345 350

Gly Gly Lys Tyr Cys Glu Gly Arg Arg Thr Arg Phe Arg Ser Cys Asn
355 360 365

Thr Glu Asp Cys Pro Thr Gly Ser Ala Leu Thr Phe Arg Glu Glu Gln

370

375

Cys Ala Ala Tyr Asn His Arg Thr Asp Leu Phe Lys Ser Phe Pro Gly
385 390 395 400

Pro Met Asp Trp Val Pro Arg Tyr Thr Gly Val Ala Pro Gln Asp Gln
405 410 415

Cys Lys Leu Thr Cys Gln Ala Arg Ala Leu Gly Tyr Tyr Tyr Val Leu
420 425 430

Glu Pro Arg Val Val Asp Gly Thr Pro Cys Ser Pro Asp Ser Ser Ser
435 440 445

Val Cys Val Gln Gly Arg Cys Ile His Ala Gly Cys Asp Arg Ile Ile
450 455 460

Gly Ser Lys Lys Lys Phe Asp Lys Cys Met Val Cys Gly Gly Asp Gly
465 470 475 480

Ser Gly Cys Ser Lys Gln Ser Gly Ser Phe Arg Lys Phe Arg Tyr Gly
485 490 495

Tyr Asn Asn Val Val Thr Ile Pro Ala Gly Ala Thr His Ile Leu Val
500 505 510

Arg Gln Gln Gly Asn Pro Gly His Arg Ser Ile Tyr Leu Ala Leu Lys
515 520 525

Leu Pro Asp Gly Ser Tyr Ala Leu Asn Gly Glu Tyr Thr Leu Met Pro
530 535 540

Ser Pro Thr Asp Val Val Leu Pro Gly Ala Val Ser Leu Arg Tyr Ser
545 550 555 560

Gly Ala Thr Ala Ala Ser Glu Thr Leu Ser Gly His Gly Pro Leu Ala
565 570 575

Gln Pro Leu Thr Leu Gln Val Leu Val Ala Gly Asn Pro Gln Asp Thr
580 585 590

Arg Leu Arg Tyr Ser Phe Phe Val Pro Arg Pro Thr Pro Ser Thr Pro
595 600 605

Arg Pro Thr Pro Gln Asp Trp Leu His Arg Arg Ala Gln Ile Leu Glu
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Ile Leu Arg Arg Arg Pro Trp Ala Gly Arg Lys Gly Ser Ala Trp Ser
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His Pro Gln Phe Glu Lys
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 20 25 30

Val Met Ala Ala Ala Ala Lys Ala Phe Lys His Pro Ser Ile Arg Asn
 35 40 45

Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu Gly Ser Gly Glu
 50 55 60

Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr Leu Arg Ser Phe
 65 70 75 80

Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp Ser Asp Pro Asp
 85 90 95

His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Val
 100 105 110

Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp
 115 120 125

Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly Leu Gln Ser Ala
 130 135 140

Phe Thr Ala Ala His Gln Leu Gly His Val Phe Asn Met Leu His Asp
 145 150 155 160

Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu Ser Thr Ser Arg
 165 170 175

His Val Met Ala Pro Val Met Ala His Val Asp Pro Glu Glu Pro Trp
 Page 61

180

190

Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu Asp Asn Gly Tyr
195 200 205

Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu His Leu Pro Val
210 215 220

Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln Cys Gln Leu Thr
225 230 235 240

Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro Pro Pro Cys Ala
245 250 255

Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala Met Cys Gln Thr
260 265 270

Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly Pro Ala Gln Ala
275 280 285

Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu Gln Asp Phe Asn
290 295 300

Ile Pro Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys
305 310 315 320

Ser Arg Thr Cys Gly Gly Gly Val Gln Phe Ser Ser Arg Asp Cys Thr
325 330 335

Arg Pro Val Pro Arg Asn Gly Gly Lys Tyr Cys Glu Gly Arg Arg Thr
340 345 350

Arg Phe Arg Ser Cys Asn Thr Glu Asp Cys Pro Thr Gly Ser Ala Leu
355 360 365

Thr Phe Arg Glu Glu Gln Cys Ala Ala Tyr Asn His Arg Thr Asp Leu
370 375 380

Phe Lys Ser Phe Pro Gly Pro Met Asp Trp Val Pro Arg Tyr Thr Gly
385 390 395 400

Val Ala Pro Gln Asp Gln Cys Lys Leu Thr Cys Gln Ala Arg Ala Leu
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Gly Tyr Tyr Tyr Val Leu Glu Pro Arg Val Val Asp Gly Thr Pro Cys
420 425 430

Ser Pro Asp Ser Ser Ser Val Cys Val Gln Gly Arg Cys Ile His Ala
 435 440 445

Gly Cys Asp Arg Ile Ile Gly Ser Lys Lys Lys Phe Asp Lys Cys Met
 450 455 460

Val Cys Gly Gly Asp Gly Ser Gly Cys Ser Lys Gln Ser Gly Ser Phe
 465 470 475 480

Arg Lys Phe Arg Tyr Gly Tyr Asn Asn Val Val Thr Ile Pro Ala Gly
 485 490 495

Ala Thr His Ile Leu Val Arg Gln Gln Gly Asn Pro Gly His Arg Ser
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Ile Tyr Leu Ala Leu Lys Leu Pro Asp Gly Ser Tyr Ala Leu Asn Gly
 515 520 525

Glu Tyr Thr Leu Met Pro Ser Pro Thr Asp Val Val Leu Pro Gly Ala
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Val Ser Leu Arg Tyr Ser Gly Ala Thr Ala Ala Ser Glu Thr Leu Ser
 545 550 555 560

Gly His Gly Pro Leu Ala Gln Pro Leu Thr Leu Gln Val Leu Val Ala
 565 570 575

Gly Asn Pro Gln Asp Thr Arg Leu Arg Tyr Ser Phe Phe Val Pro Arg
 580 585 590

Pro Thr Pro Ser Thr Pro Arg Pro Thr Pro Gln Asp Trp Leu His Arg
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      50      55      60
Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr Leu Arg Ser Phe
      65      70      75      80
Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp Ser Asp Pro Asp
      85      90      95
His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Val
      100      105      110
Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp
      115      120      125
Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly Leu Gln Ser Ala
      130      135      140
Phe Thr Ala Ala His Gln Leu Gly His Val Phe Asn Met Leu His Asp
      145      150      155      160
Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu Ser Thr Ser Arg
      165      170      175
His Val Met Ala Pro Val Met Ala His Val Asp Pro Glu Glu Pro Trp
      180      185      190
Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu Asp Asn Gly Tyr
      195      200      205
Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu His Leu Pro Val
      210      215      220
Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln Cys Gln Leu Thr
      225      230      235      240
Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro Pro Pro Cys Ala
      245      250      255

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Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala Met Cys Gln Thr
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Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly Pro Ala Gln Ala
275 280 285

Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu Gln Asp Phe Asn
290 295 300

Ile Pro Gln Ala Gly Gly Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys
305 310 315 320

Ser Arg Thr Cys Gly Gly Gly Val Gln Phe Ser Ser Arg Asp Cys Thr
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Arg Phe Arg Ser Cys Asn Thr Glu Asp Cys Pro Val Asp Tyr Lys Asp
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Asp Asp Asp Lys
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Lys Met Ala Ala Phe His Gly Ala Gly Leu Lys Arg Tyr Leu Leu Thr
20 25 30

Val Met Ala Ala Ala Lys Ala Phe Lys His Pro Ser Ile Arg Asn
35 40 45

Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu Gly Ser Gly Glu
50 55 60

Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr Leu Arg Ser Phe
65 70 75 80

Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp Ser Asp Pro Asp
Page 65

His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Val
 100 105 110

Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp
 115 120 125

Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly Leu Gln Ser Ala
 130 135 140

Phe Thr Ala Ala His Gln Leu Gly His Val Phe Asn Met Leu His Asp
 145 150 155 160

Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu Ser Thr Ser Arg
 165 170 175

His Val Met Ala Pro Val Met Ala His Val Asp Pro Glu Glu Pro Trp
 180 185 190

Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu Asp Asn Gly Tyr
 195 200 205

Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu His Leu Pro Val
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Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln Cys Gln Leu Thr
 225 230 235 240

Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro Pro Pro Cys Ala
 245 250 255

Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala Met Cys Gln Thr
 260 265 270

Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly Pro Ala Gln Ala
 275 280 285

Cys Met Gly Gly Arg Cys Leu His Met Asp Gln Leu Gln Asp Phe Asn
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Ile Pro Gln Ala Val Asp Tyr Lys Asp Asp Asp Asp Lys
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Val Met Ala Ala Ala Lys Ala Phe Lys His Pro Ser Ile Arg Asn
 35 40 45

Pro Val Ser Leu Val Val Thr Arg Leu Val Ile Leu Gly Ser Gly Glu
 50 55 60

Glu Gly Pro Gln Val Gly Pro Ser Ala Ala Gln Thr Leu Arg Ser Phe
 65 70 75 80

Cys Ala Trp Gln Arg Gly Leu Asn Thr Pro Glu Asp Ser Asp Pro Asp
 85 90 95

His Phe Asp Thr Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Val
 100 105 110

Ser Thr Cys Asp Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp
 115 120 125

Pro Ala Arg Ser Cys Ala Ile Val Glu Asp Asp Gly Leu Gln Ser Ala
 130 135 140

Phe Thr Ala Ala His Gln Leu Gly His Val Phe Asn Met Leu His Asp
 145 150 155 160

Asn Ser Lys Pro Cys Ile Ser Leu Asn Gly Pro Leu Ser Thr Ser Arg
 165 170 175

His Val Met Ala Pro Val Met Ala His Val Asp Pro Glu Glu Pro Trp
 180 185 190

Ser Pro Cys Ser Ala Arg Phe Ile Thr Asp Phe Leu Asp Asn Gly Tyr
 195 200 205

Gly His Cys Leu Leu Asp Lys Pro Glu Ala Pro Leu His Leu Pro Val
 210 215 220

Thr Phe Pro Gly Lys Asp Tyr Asp Ala Asp Arg Gln Cys Gln Leu Thr
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225 230 235 240
 Phe Gly Pro Asp Ser Arg His Cys Pro Gln Leu Pro Pro Pro Cys Ala
 245 250 255
 Ala Leu Trp Cys Ser Gly His Leu Asn Gly His Ala Met Cys Gln Thr
 260 265 270
 Lys His Ser Pro Trp Ala Asp Gly Thr Pro Cys Gly Pro Ala Gln Ala
 275 280 285
 Cys Met Gly Gly Arg Cys Leu His Met Trp Ser His Pro Gln Phe Glu
 290 295 300
 Lys Asp Gln Leu Gln Asp Phe Asn Ile Pro Gln Ala Gly Gly Trp Gly
 305 310 315 320
 Pro Trp Gly Pro Trp Gly Asp Cys Ser Arg Thr Cys Gly Gly Gly Val
 325 330 335
 Gln Phe Ser Ser Arg Asp Cys Thr Arg Pro Val Pro Arg Asn Gly Gly
 340 345 350
 Lys Tyr Cys Glu Gly Arg Arg Thr Arg Phe Arg Ser Cys Asn Thr Glu
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 Asp Cys Pro Thr Gly Ser Ala Leu Thr Phe Arg Glu Glu Gln Cys Ala
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 Ala Tyr Asn His Arg Thr Asp Leu Phe Lys Ser Phe Pro Gly Pro Met
 385 390 395 400
 Asp Trp Val Pro Arg Tyr Thr Gly Val Ala Pro Gln Asp Gln Cys Lys
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 Arg Val Val Asp Gly Thr Pro Cys Ser Pro Asp Ser Ser Ser Val Cys
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 Val Gln Gly Arg Cys Ile His Ala Gly Cys Asp Arg Ile Ile Gly Ser
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 Lys Lys Lys Phe Asp Lys Cys Met Val Cys Gly Gly Asp Gly Ser Gly
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Cys Ser Lys Gln Ser Gly Ser Phe Arg Lys Phe Arg Tyr Gly Tyr Asn
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Asn Val Val Thr Ile Pro Ala Gly Ala Thr His Ile Leu Val Arg Gln
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Gln Gly Asn Pro Gly His Arg Ser Ile Tyr Leu Ala Leu Lys Leu Pro
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Asp Gly Ser Tyr Ala Leu Asn Gly Glu Tyr Thr Leu Met Pro Ser Pro
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Thr Asp Val Val Leu Pro Gly Ala Val Ser Leu Arg Tyr Ser Gly Ala
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Thr Ala Ala Ser Glu Thr Leu Ser Gly His Gly Pro Leu Ala Gln Pro
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Leu Thr Leu Gln Val Leu Val Ala Gly Asn Pro Gln Asp Thr Arg Leu
 580 585 590

Arg Tyr Ser Phe Phe Val Pro Arg Pro Thr Pro Ser Thr Pro Arg Pro
 595 600 605

Thr Pro Gln Asp Trp Leu His Arg Arg Ala Gln Ile Leu Glu Ile Leu
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Arg Arg Arg Pro Trp Ala Gly Arg Lys
 625 630